

**Brain Structures**

**Cerebral Cortex** http://faculty.washington.edu/chudler/ideaman.gif

Functions:

* Thought
* Voluntary movement
* Language
* Reasoning
* Perception

The word "cortex" comes from the Latin word for "bark" (of a tree). This is because the cortex is a sheet of tissue that makes up the outer layer of the brain. The thickness of the cerebral cortex varies from 2 to 6 mm. The right and left sides of the cerebral cortex are connected by a thick band of nerve fibers called the ["corpus callosum."](http://www.indiana.edu/~pietsch/callosum.html) In higher mammals such as humans, the cerebral cortex looks like it has many bumps and grooves. A bump or bulge on the cortex is called a **gyrus** (the plural of the word gyrus is "gyri") and a groove is called a **sulcus** (the plural of the word sulcus is "sulci"). Lower mammals, such as rats and mice, have very few gyri and sulci.

**Cerebellum**

Functions:

* Movement
* Balance
* Posture

The word "cerebellum" comes from the Latin word for "little brain." The [cerebellum](http://www.newhorizons.org/neuro/leiner.htm) is located behind the brain stem. In some ways, the cerebellum is similar to the cerebral cortex: the cerebellum is divided into hemispheres and has a cortex that surrounds these hemispheres.

**Brain stem**

Functions: 

* Breathing
* Heart Rate
* Blood Pressure

The brain stem is a general term for the area of the brain between the thalamus and spinal cord. Structures within the brain stem include the medulla, pons, tectum, reticular formation and tegmentum. Some of these areas are responsible for the most basic functions of life such as breathing, heart rate and blood pressure.

**Hypothalamus**

Functions: http://faculty.washington.edu/chudler/gif/thermo1.gif

* Body Temperature
* Emotions
* Hunger
* Thirst
* Circadian Rhythms

The hypothalamus is composed of several different areas and is located at the base of the brain. Although it is the size of only a pea (about 1/300 of the total brain weight), the hypothalamus is responsible for some very important functions. One important function of the hypothalamus is the control of body temperature. The hypothalamus acts as a "thermostat" by sensing changes in body temperature and then sending signals to adjust the temperature. For example, if you are too hot, the hypothalamus detects this and then sends a signal to expand the capillaries in your skin. This causes blood to be cooled faster. The hypothalamus also controls the pituitary.

**Thalamus**

Functions: http://faculty.washington.edu/chudler/gif/arrowout.gif

* Sensory processing
* Movement

The thalamus receives sensory information and relays this information to the cerebral cortex. The cerebral cortex also sends information to the thalamus which then transmits this information to other areas of the brain and spinal cord.

**Limbic System**

Functions:

* Emotions
* Memory

The limbic system (or the limbic areas) is a group of structures that includes the amygdala, the hippocampus, mammillary bodies and cingulate gyrus.

**Hippocampus**

Functions: 

* Learning
* Memory

The hippocampus is one part of the limbic system that is important for memory and learning.

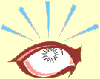
**Basal Ganglia**

Functions: 

* Movement

The basal ganglia are a group of structures that are important in coordinating movement.

**Midbrain**

Functions: 

* Vision
* Audition
* Eye Movement
* Body Movement

The midbrain includes structures such as the superior and inferior colliculi and red nucleus. There are several other areas also in the midbrain.